Mariner Jupiter/Saturn 1977 Pre-Assembly
Requirements Collection, 1969-1977
4.2 cubic feet
JPL 206

History

Project Voyager, originally called "Mariner Jupiter/Saturn '77" (MJS '77) was approved by NASA and the U.S. Congress in June 1972. It was a dual spacecraft long-range mission that conducted a "Grand Tour" of the Outer Planets, visiting Jupiter, Saturn, Uranus, Neptune, as well as various planetary satellites, and continued beyond to the outer reaches of the Solar System.

The name of the project was changed from "Mariner Jupiter/Saturn" to "Voyager" in early March 1977. A March 16, 1977 memo, distributed to personnel, officially notified them that the project was to be known only as Voyager.

Three spacecraft were fabricated. VGR77-1 was the Proof-Test Model, and was not launched. VGR77-2 was designated as Flight 1 (Voyager 2) and VGR77-3 was designated as Flight 2 (Voyager 1). The proof-test model, VGR77-1 is on display in the von Kármán Auditorium at JPL.

The Proof-Test Model was identified as having possible later use in two instances. The first use would be in case of a failure of one of the Voyager spacecraft. In that case, the remaining spacecraft would not be deflected to Uranus because of what was deemed the more important Titan encounter and occultation.

The Voyager Project was the longest and most complex of any unmanned mission so far. The design philosophy adopted for MJS '77 was to design a spacecraft based on the existing Mariner and Viking designs, particularly Jet Propulsion Laboratory's experience with the 1975 Viking Orbiter.

Spacecraft design had to meet the environmental requirements from the time of initial assembly through ground test, transportation, launch, cruise and encounter operations, the latter two planned to take place over a twenty year period. The spacecraft was instrumented, to the extent practical, to obtain diagnostic telemetry in the event of failure, whether the failures were caused by system malfunction or by encountering unanticipated environments.

Voyager 2 was launched on August 20, 1977, and Voyager 1 was launched on September 5, 1977 to take advantage of a favorable alignment of the Jupiter, Saturn, Neptune and Uranus. Both launches took place from the Cape Canaveral Air Force Station in Florida.

Using gravity assist flybys and well-planned trajectories, the spacecraft encountered all four planets without the need for an impractical amount of propellant. The flyby of each planet both accelerated the spacecraft and bowed its flight path. Without these gravity assists, the flight time to Neptune would have been 30 years.

Provenance

This collection was transferred to the Archives without the retention of any provenance data in 1990.

Collection Arrangement and Description

The collection describes the spacecraft parts that were received, shipped, reshipped, tested, pre-assembled and assembled. There are documents on project plans, functional requirements, hazardous materials, Radioisotope Thermal Electric Generator summary reports, radiation control requirements, flight support equipment, inspection records, Voyager spacecraft hazardous reports, critical safety reviews and various other memoranda of the MJS '77/ Voyager Project. The originator of the documents varies. Documents names that used "MJS" or "Mariner Jupiter/ Saturn", in contrast to *Voyager,* at the time of their creation are retained.

The collection consists of four disassembled binders and nineteen volumes of documents with JPL 618-prefix series here arranged in files as originally sequenced. The files include cover page, contents, introduction and distribution list plus the body of the document. The document includes standard assembly procedures from VGR77-2 known as Flight-1 and VGR77-3 also known as Flight -2. Also there are spacecraft inspection requirements, flight equipment and functional spacecraft daily activity procedures at

both the system and subsystem levels for periods 1969 through 1977. Arrangement as bound is maintained. The original covers of the document were photocopied and the original binders discarded. Information from divider tabs in the binders was made a part of the file folder descriptions below.

The Spacecraft System Engineer, cognizant engineer's supervisors and division representatives for the MJS '77/Voyager Project created the interoffice memoranda and revisions found in the collection.

Conservation/Preservation

Standard preparations of documents for long term storage were completed.

Separation Statement

No materials were separated from the collection.

Finding Aids

There are no other finding aids.

File Folder List

File titles are derived from divider tabs or section headings; sequence identification numbers were retained as found.

Box 1

Fld. 1 Miscellaneous Memoranda, 1969-1975, February 1969.

Fld. 2 Miscellaneous Memoranda, 1973, January 3, 1973.

Fld. 3 Miscellaneous Memoranda, 1974, January 10, 1974.

Fld. 4 Miscellaneous Memoranda, 1975, January 8, 1975.

Fld. 5 PD 618-5. Raymond Heacock, *Revision A, Mariner Jupiter/Saturn 1977 Project Plan,* January 10, 1975.

Fld. 6 PD 618-221. Thomas R. Gavin, *Project Document Mariner Jupiter/Saturn 1977 Spacecraft Subsystem Reliability Requirements,* June 4, 1973

Fld. 7 PD 618-211. *Project Document Appendix B Approved Parts List Mariner Jupiter /Saturn 1977 Project Document Parts, Materials, and Process Requirements,* October 4, 1973.

Fld. 8 618-211. Raymond L. Heacock, *MJ/S '77 Parts, Materials, and Process Requirements,* October 4, 1973.

Fld. 9 618-211. Raymond L. Heacock, *Spacecraft Procurement Instructions,* January 10, 1974.

Fld. 10 Raymond L. Heacock, *Mariner Jupiter/Saturn 1977 Support Equipment Functional Requirements Book,* April 24, 1974. Part 1 of 3.

Fld. 11 Part 2 of 3.

Fld. 12 Part 3 of 3.

Fld. 13 PD 618-265. E. James Junkins, *Mariner Jupiter/Saturn 1977 Spacecraft System Problem/Failure Reporting and Analysis Requirements and Procedures,* January 24, 1975.

Box 2

Fld. 14 618-267. Lawrence C. Montgomery, *Mariner Jupiter/ 1977 Hazard Catalog,* February 18, 1975. Part 1 of 2.

Fld. 15 Part 2 of 2.

Fld. 16 618-205. Ronald Draper, *MJS '77 Inertial Properties,* February 26, 1975. Part 1 of 4.

Fld. 17 Part 2 of 4.

Fld. 18 Part 3 of 4.

Fld. 19 Part 4 of 4.

Fld. 20 PD 618-223. Thomas R. Gavin, *Rev. A, Mariner Jupiter/Saturn 1977 Spacecraft System Review Program,* April 15, 1975.

Fld. 21 MJS '77 Radioisotope Thermal Electric Generator, June 24, 1975. Part 1 of 5.

Fld. 22 Part 2 of 5.

Fld. 23 Part 3 of 5.

Fld. 24 Part 4 of 5.

Fld. 25 Part 5 of 5.

Box 3

Fld. 26 PD 618-260. Tom E. Gindorf, *Rev. A, Mariner Jupiter/Saturn 1977 Environmental Test and Analysis Configuration Document,* August 1, 1975. Part 1 of 3.

Fld. 27 Part 2 of 3.

Fld. 28 Part 3 of 3.

Fld. 29 Output Assemblies, November 3, 1975.

Fld. 30 Memory Sub-Assemblies, November 3, 1975. Part 1 of 2.

Fld. 31 Part 2 of 2.

Fld. 32 Processor Assembly, December 4, 1975. Part 1 of 4.

Fld. 33 Part 2 of 4.

Fld. 34 Part 3 of 4.

Fld. 35 Part 4 of 4.

Fld. 36 Fabrication Techniques for Electronics Equipment, December 16, 1975. Part 1 of 2.

Box 4

Fld. 37 Part 2 of 2.

Fld. 38 618-229. Tom E. Gindorf, *Rev. A, MJS '77 Radiation Control Requirements Document,* December 19, 1975.

Fld. 39 PD 618-228. Tom E. Gindorf, *Rev. B, Mariner Jupiter/Saturn 1977 Spacecraft System Environment Program Policy and Requirements,* January 15, 1976.

Fld. 40 PD 618-260. Tom E. Gindorf, *Rev. B, Mariner Jupiter/Saturn 1977 Environmental Test and Analysis Configuration Document,* February 2, 1976.

Fld. 41 PD 618-261. Joseph G. Baston, *Rev. A, Mariner Jupiter/Saturn 1977 Electromagnetic Compatibility Control Requirements Document,* February 10, 1976.

Fld. 42 PD 618-262. Joseph G. Baston, *Rev. A, Mariner Jupiter/Saturn 1977 Spacecraft System Magnetic Control Requirements Document,* February 16, 1976.

Fld. 43 H. G. Homan, *MJS '77, Flight Equipment General Specification,* March 1, 1976.

Fld. 44 MJS '77 Photopolarimeter, March 17, 1976.

Fld. 45 618-206. R. A. Rotter, *MJS '77 Support Equipment Functional Requirements Book,* May 11, 1976. Part 1 of 6.

Fld. 46 Part 2 of 6.

Fld. 47 Part 3 of 6.

Fld. 48 Part 4 of 6.

Fld. 49 Part 5 of 6.

Fld. 50 Part 6 of 6.

Box 5

Fld. 51 MJS '77 Quality Assurance Laboratory, May 27, 1975.

Fld. 52 Miscellaneous Memoranda, Flight Support Equipment, May 27, 1975. Part 1 of 2.

Fld. 53 Part 2 of 2.

Fld. 54 618-250. MJS '77, Level 1 Introduction, Test and Operations Plan, March 18, 1976.

Fld. 55 Level 2, Test Program Management, March 18, 1976.

Fld. 56 Level 3, Planning and Control, March 18, 1976.

Fld. 57 Level 4, Implementation, March 18, 1976.

Fld. 58 Appendix, March 18, 1976.

Fld. 59 PD 618-265. E. James Junkins, *Rev. A, MJS '77 Spacecraft System Problem/Failure Reporting and Analysis Requirements and Procedures,* March 30, 1976.

Fld. 60 *Mariner Jupiter/Saturn 1977 Critical Safety Review,* April 1, 1976. Part 1 of 3.

Fld. 61 Part 2 of 3.

Fld. 62 Part 3 of 3.

Fld. 63 Dry Gyro Inertial Unit, May 3, 1976. Part 1 of 2.

Fld. 64 Part 2 of 2.

Fld. 65 Jet Propulsion Laboratory Hybrid Memory Status. May 31, 1976. Part 1 of 2.

Fld. 66 Part 2 of 2.

Fld. 67 Miscellaneous Memoranda, Hardware Reviews, June 10,1976.

Fld. 68 Miscellaneous Memoranda, Wind Tunnel and Center of Gravity Summary, June 10, 1976.

Fld. 69 Miscellaneous Memoranda, Precautions Using Anti-Static Plastics, June 10, 1976.

Fld. 70 Miscellaneous Memoranda, Safety, June 10, 1976.

Fld. 71 Unit History Log, June 22, 1976. Part 1 of 2.

Fld. 72 Part 2 of 2.

Fld. 73 618-400. Ernest L. Nave, *Section 293, Handling and Operational Constraints,* July 26, 1976.

Fld. 74 MJS '77, (PTM) Test and Operations Status Report No. 7, September 24, 1976.
Fld. 75 MJS '77, Sun Sensor Support Equipment Hood, December 14, 1976. Part 1 of 2.

Fld. 76 Part 2 of 2.

Fld. 77 Inspection Reports on Die- TWIX Packages, December 17, 1976.

Fld. 78 Memoranda, MJS '77- Spacecraft Software Assembly Material Transfer, December 28, 1976.

Box 7

Fld. 79 Proof Test Module System Test Review, January 6, 1977. Part 1 of 2.

Fld. 80 Part 2 of 2.

Fld. 81 PD 618-407. Jewel C. Beckert, *MJS '77 Spacecraft Facility Requirements*, February 1, 1977.

Fld. 82 2001. MJS '77 Flight Equipment Removal/Re-Certification Record, February 2, 1977.

Fld. 83 2002. MJS '77 Flight Equipment Removal/Re-Certification Record, February 2, 1977.

Fld. 84 2003-008. MJS '77 Flight Equipment Removal/Re-Certification Record, February 2, 1977.

Fld. 85 2009-016. MJS '77 Flight Equipment Removal/Re-Certification Record, February 2, 1977.

Fld. 86 2017-033. MJS '77 Flight Equipment Removal/ Re-Certification Records, February 2, 1977

Fld. 87 2034-2101. MJS '77 Flight Equipment Removal/Re-Certification Records, February 2, 1977.

Fld. 88 PD 618-268. Charles M. Reynolds, MJS '77 Spacecraft Pad Safety Report, March 8, 1977. Part 1 of 2.

Box 8

Fld. 89 Part 2 of 2.

Fld. 90 Frank C. Locatell, Flight 2- Voyager Spacecraft Assembly, April 5, 1977. Part 1 of 3.

Fld. 91 Part 2 of 3.

Fld. 92 Part 3 of 3.

Fld. 93 Frank Locatell, Flight 77-3, Voyager Spacecraft Pre-Shipment Assembly, Part 1 of 3.

Fld. 94 Part 2 of 3.

Fld. 95 Part 3 of 3.

Fld. 96 Inspection Report, April 7, 1977

Fld. 97 Quality Assurance Micro-Electronics Inspection Reports, April 21, 1977.

Fld. 98 Transportation of Encapsulated Assembly, May 11, 1977. Part 1 of 3.

Fld. 99 Part 2 of 3.

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Fld. 100 Part 3 of 3.

Fld. 101 Subsystem Work Remaining At Cape, May 25, 1977. Part 1 of 4.

Fld. 102 Part 2 of 4.

Fld. 103 Part 3 of 4.

Fld. 104 Part 4 of 4.

Fld. 105 Radioisotope Thermal Electric Generator's Procedures, May 27, 1977.

Fld. 106 RTG's SN-6410113, May 27, 1977. Part 1 of 2.

Fld. 107 Part 2 of 2.

Fld. 108 RTG F-7 S/N 6410114, May 27, 1977. Part 1 of 2.

Fld. 109 Part 2 of 2.

Fld. 110 RTG's F-8 S/N 641015, May 27,1977.

Fld. 111 RTG's F8 and F9 Storage and Periodic Pressure, May 27,1977.

Box 10

Fld. 112 RTG's Radioisotope Heater Unit's, May 27,1977.

Fld. 113 RTG's Procedures, June 7, 1977.
Fld. 114 RTG's Procedures, June 7, 1977.

Fld. 115 RTG's F-11 S/N 6410118, June 7, 1977.

Fld. 116 RTG's F-12 S/N 6410119, June 7, 1977.

Fld. 117 Voyager Spacecraft Post-Shipment Review, June 7,1977. Part 1 of 6.

Fld. 118 Part 2 of 6.

Fld. 119 Part 3 of 6.

Fld. 120 Part 4 of 6.

Fld. 121 Part 5 of 6.

Box 11

Fld. 122 Part 6 of 6.

Fld. 123 Support Equipment Removal/Re-Certification Record, June 9, 1977. Part 1 of 3.

Fld. 124 Part 2 of 3.

Fld. 125 Part 3 of 3.

Fld. 126 RTG's Electrical Performance Test, June 24, 1977. Part 1 of 3.

Fld. 127 Part 2 of 3.

Fld. 128 Part 3 of 3.

Fld. 129 Quality Assurance Micro-Electronics Inspection Record, June 29, 1977. Part 1 of 4.

Fld. 130 Part 2 of 4.

Fld. 131 Part 3 of 4.

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Fld. 132 Part 4 of 4.

Fld. 133 Voyager Support Equipment, July 6, 1977. Part 1 of 3.

Fld. 134 Part 2 of 3.

Fld. 135 Part 3 of 3.

Fld. 136 Acoustic Beacon Handling Assembly and Installation, July 25, 1977. Part 1 of 2.

Fld. 137 Part 2 of 2.

Fld. 138 Q. A. Spacecraft Daily Activity Report, August 4, 1977. Part 1 of 2.

Fld. 139 Part 2 of 2.

Fld. 140 Voyager Spacecraft Activity Report, August 14, 1977. Part 1 of 4.

Fld. 141 Part 2 of 4.

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Fld. 142 Part 3 of 4.

Fld. 143 Part 4 of 4.

Fld. 144 Voyager Interoffice Memoranda, August 15, 1977.

Fld. 145 Voyager Spacecraft Activity Report, August 15, 1977.

Fld. 146 Voyager Spacecarft Activity Report, August 29, 1977. Part 1 of 5.

Fld. 147 Part 2 of 5.

Fld. 148 Part 3 of 5.

Fld. 149 Part 4 of 5.

Fld. 150 Part 5 of 5.

Box 14

Fld. 151 Voyager RTG's Hazardous Operations, September 1, 1977. Part 1 of 6.

Fld. 152 Part 2 of 6.

Fld. 153 Part 3 of 6.

Fld. 154 Part 4 of 6.
Fld. 155 Part 5 of 6.

Fld. 156 Part 6 of 6.

Fld. 157 Shippers For Parts Received. October 31, 1977.

Fld. 158 Parts Sold To General Electric, November 3, 1977.

CATALOG DESCRIPTION

Mariner Jupiter/Saturn 1977 Pre-Assembly Requirements Collection, 1969-1977.
4.2 c.f. in 158 folders

NASA and the U.S. Congress approved MJS '77, later named Project Voyager in June 1972. It was a dual spacecraft long-range mission that conducted a "Grand Tour" of the Outer Planets, visiting Jupiter, Saturn, Uranus, Neptune, and numerous planetary satellites, and continued beyond the planets to the outer reaches of the Solar System. The project was managed by Jet Propulsion Laboratory (JPL).

Includes cover page, contents, distribution list and memoranda to Mariner Jupiter/Saturn 1977 pre-assembly requirements criteria, and various volumes of standard project procedures and spacecraft assembly requirements for 1969 through 1977. Register available in the repository.

Tracings

Jet Propulsion Laboratory – History
Project Voyager – Space Flight Team
Mariner Jupiter/Saturn 1977
Baston, Joseph G.
Beckert, Jewel C.
Draper, Ronald
Gavin, Thomas
Gindorf, Tom E.
Heacock, Raynold
Homan, H. G.
Junkins, James
Locatell, Frank
Montgomery, Lawrence C.
Nave, Ernest
Reynolds, Charles M.

Accession 90-120.